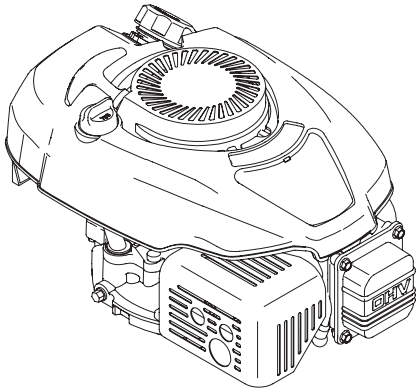
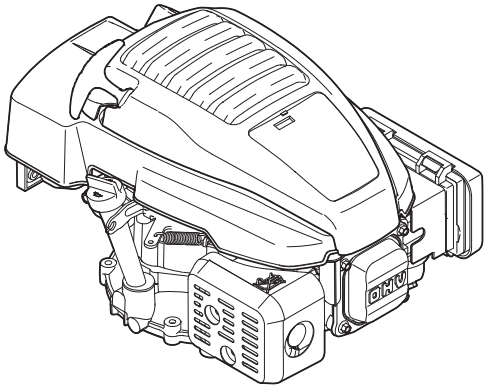
MTD OHV Series





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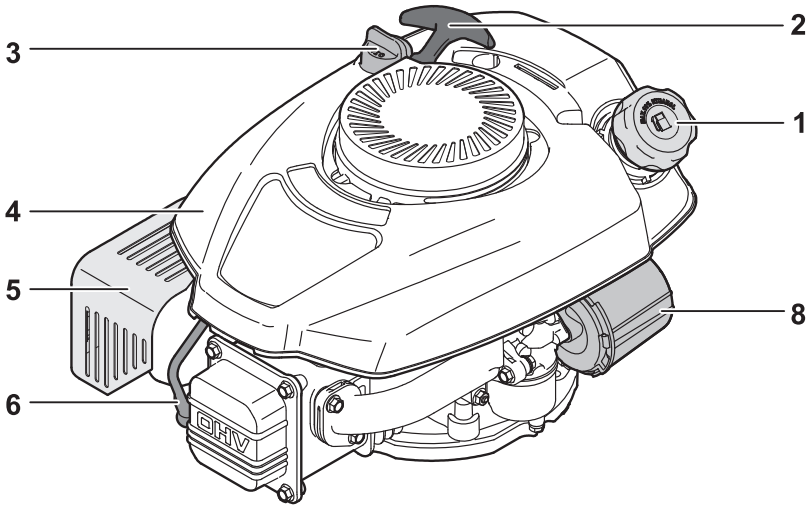

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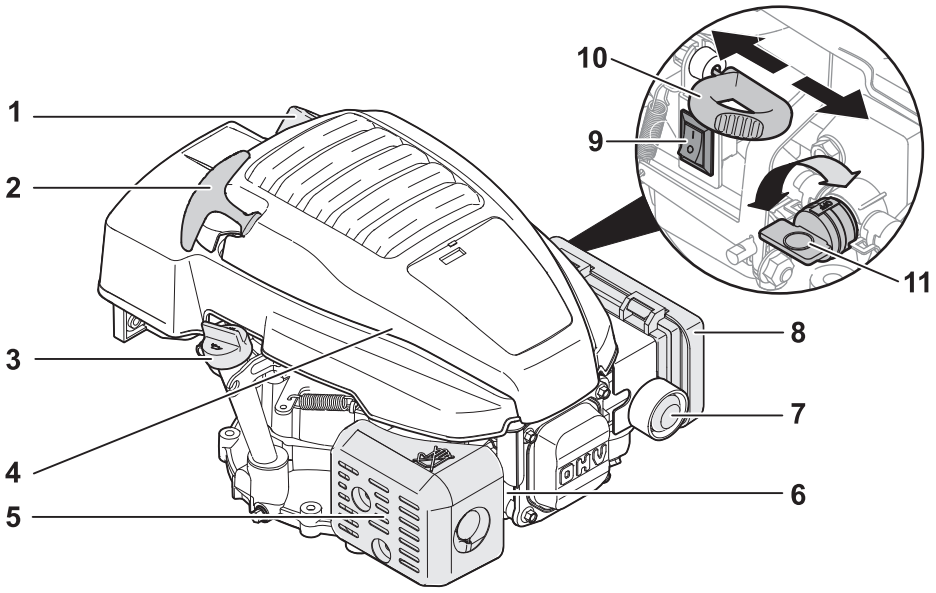

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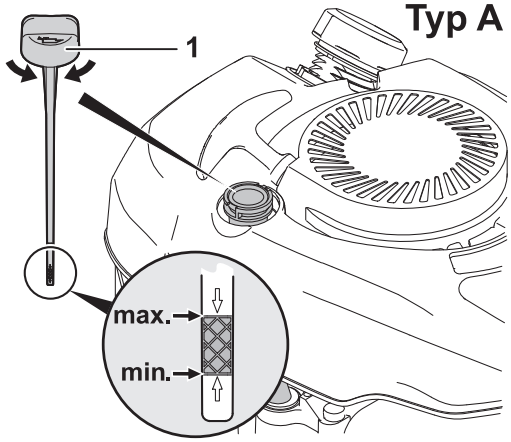

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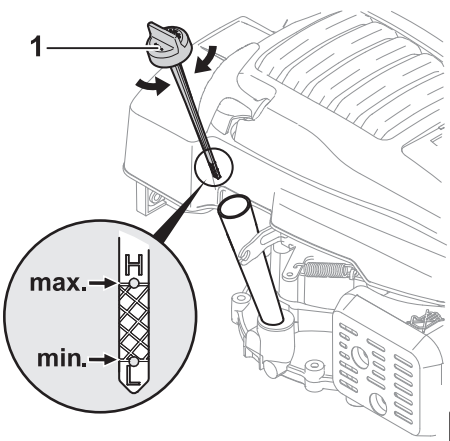

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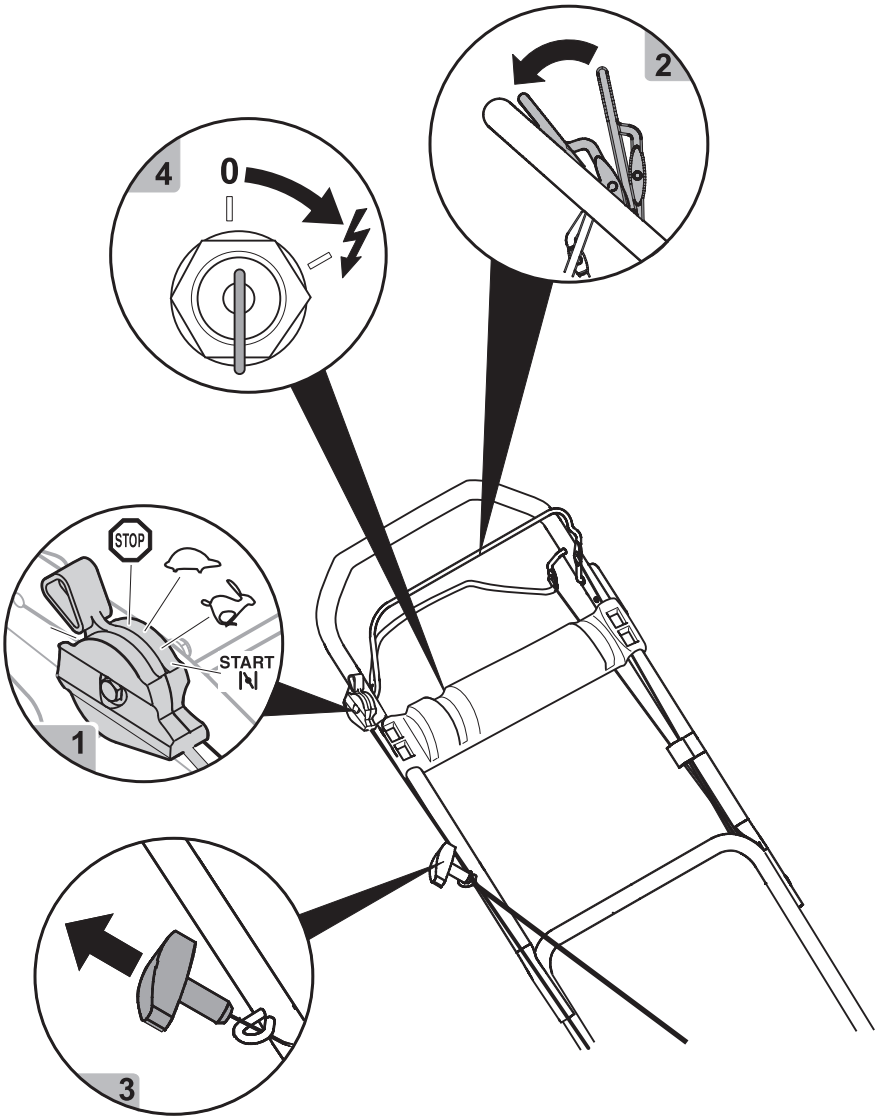

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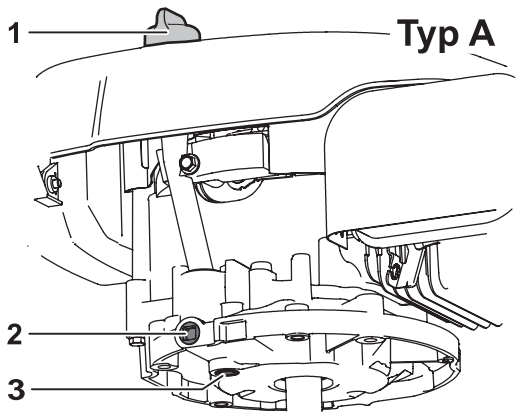

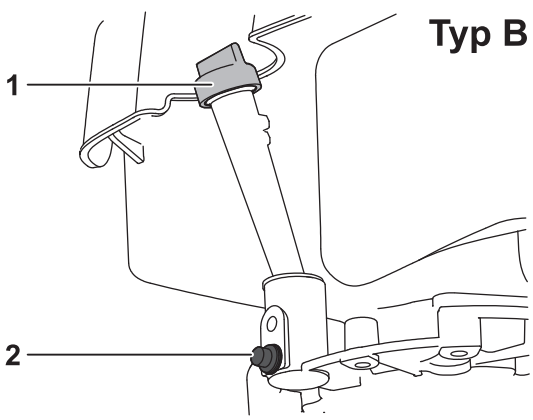

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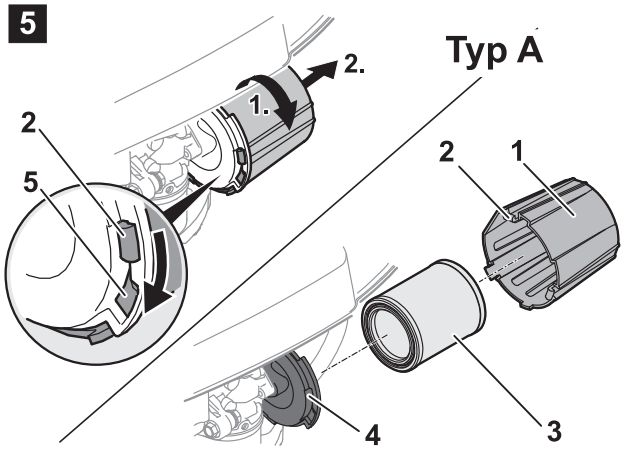

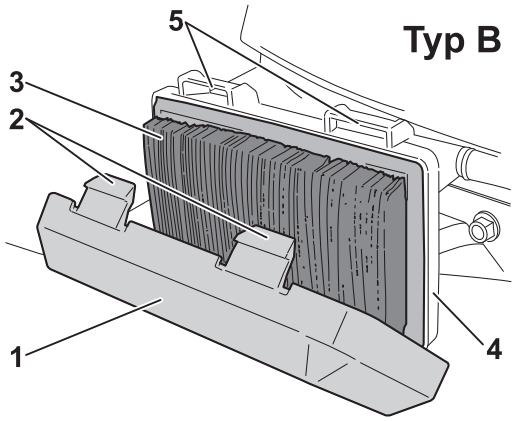

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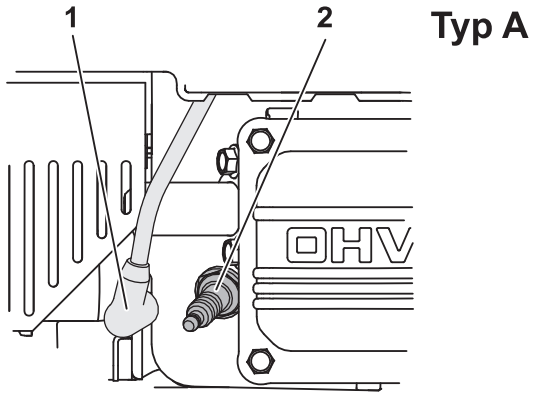

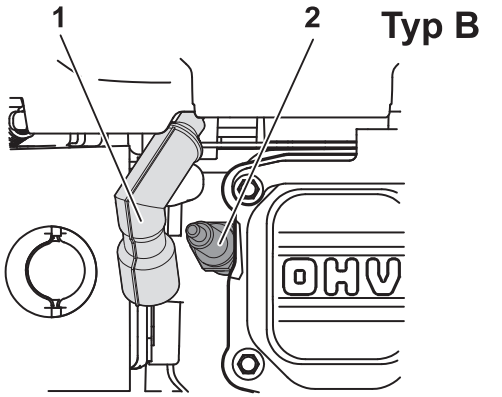

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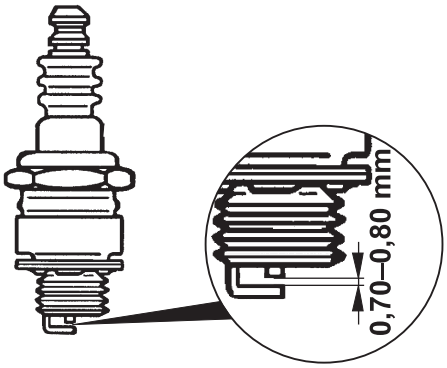

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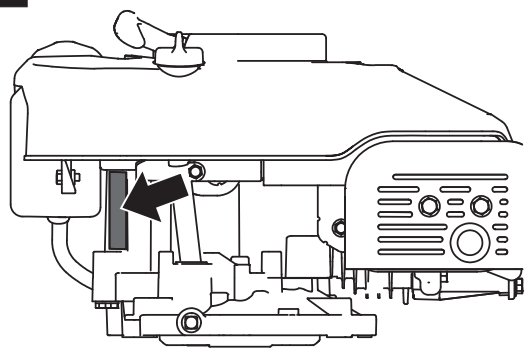

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Handling the document

As the user of this unit, read this operating manual carefully before using the unit for the first time. Then comply with the operating manual and keep it for subsequent use. Never allow children or other people who are not familiar with this operating manual to use the unit.

This manual includes safety instructions which
– point out dangers in connection with the engine,
– indicate risks of injury,
– show how the risk of injury can be avoided or reduced.

The safety instructions in this manual are identified as follows:

⚠ ***Danger!***
Denotes impending danger. Non-observance of this warning may result in death or extremely severe injuries.

⚠ ***Caution!***
Denotes a dangerous situation. Non-observance of this warning may result in slight injury or damage to property.

Important
Denotes application tips and important information.

Specifications on the engine housing

Fig. 8

These specifications are very important for subsequent identification when ordering spare parts and for customer service. Enter all engine specifications in the box (Fig. 9).

Safe operating practices

Important

In general the term “unit” is used in the following. The engine can be installed in different units.

⚠ ***Risk of explosion and fire!***

Petrol and petrol vapours are extremely flammable and explosive. A fire or an explosion may result in serious burns or fatalities. If petrol gets onto your body or clothing, wash skin immediately and change clothing.

– *Before refuelling, switch off the engine and leave to cool down for at least two minutes before opening the fuel cap.*
– *Fill up the tank outdoors or in a well ventilated area only.*
– *Use authorised fuel containers only.*
– *Never fill up a petrol can in a vehicle, tractor or on a trailer with plastic panelling. Always fill a petrol can on the ground and at some distance from the vehicle.*
– *If possible, take motorised units out of the heavy goods vehicle or the trailer and refuel on the ground. If this is not possible, fill up these units with a petrol can instead of directly with the petrol pump hose.*
– *Always place the tank pipe on the edge of the filler neck on the tank or petrol can until the refuelling is complete. Do not use the locking lever for continuous filling.*
– *Do not overfill the tank. Fill the tank until approx. two centimetres below the rim of the filler neck to allow the fuel to expand.*
– *Keep the fuel away from sparks, naked flames, warning lights, heat and ignition sources.*
– *Never refuel units in closed rooms, as flammable vapours will form.*
– *Do not smoke.*
– *Frequently check fuel lines, tank, fuel cap and connection parts for cracks and leaks. If required, replace.*
– *Before starting the engine, ensure that the spark plug, exhaust, fuel cap and air filter have been attached.*
– *Do not start the engine without installed spark plug.*
– *Fuel has been spilled, wait until the fuel has evaporated before starting the engine.*
– *When operating units, do not tilt the engine or the unit to such an extent that fuel can run out.*
– *Do not use the choke to stop the engine.*
– *Transport units with empty tank only.*
– *Keep petrol or units with full tank away from heaters, ovens, hot water boilers or other equipment which feature warning lights or other ignition sources, as these may ignite petrol vapours.*

⚠ ***Risk of explosion and fire!***

Sparks are generated when the engine is started. These sparks may ignite flammable vapours in the vicinity. This may result in an explosion or fire.

– *Do not start the engine near damaged, gas-operated equipment.*
– *Do not use any pressurised starting aids, as their vapours are flammable.*

⚠ ***Risk of asphyxiation!***

Engines release carbon monoxide, an odourless and colourless toxic gas. Inhalation of carbon monoxide may result in dizziness, fainting or death.

– *Start and run the engine outdoors only.*
– *Do not start or run the engine in closed rooms, even if doors and windows are open.*

⚠ ***Risk of injury!***

If the engine is started unintentionally, this may result in serious injuries, a fire or an electric shock.

– *Before carrying out any work, e.g. settings or repairs, always remove the spark plug terminal and keep it away from the spark plug.*

– *For ignition tests, use an authorised ignition tester only.*
– *Conduct an ignition test on a spark plug which has been removed.*

⚠ ***Risk of burns! Risk of fire!***

A running engine generates heat. Engine parts, especially the exhaust, are extremely hot. Do not touch, otherwise you could receive severe burns.
Flammable objects such as leaves, grass, bushes, etc. may catch fire.
– *Do not touch the exhaust, cylinder block or cooling fins until they have cooled down.*
– *Keep children away from a hot or running engine.*
– *Remove flammable objects from the vicinity of the exhaust and cylinder.*

⚠ ***Risk of electric shock! Risk of fire!***

Ignition sparks may cause a fire or electric shock.

⚠ ***Risk of injury!***

Rotating parts may touch or catch hands, feet, hair, clothing or clothing parts. This may result in serious injuries.
– *Operate the unit with installed guards only.*
– *Keep hand and feet away from rotating parts.*
– *Before starting work, tie back long hair and remove jewellery.*
– *Do not wear loose-fitting clothing, hanging strings or parts which could become caught.*

⚠ ***Risk of injury!***

The quick retraction of the starter cable (recoil, e.g. caused by a misfire) will pull your hand and arm towards the engine more quickly than you can release the starter handle. This may result in injuries.
– *To start the engine, slowly pull the starter handle until it begins to resist, then pull in one go.*
– *Before starting the engine, remove all objects situated on the engine.*
– *Directly connected components, such as cutters, fan impeller, drive parts, etc., must be attached securely.*

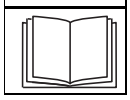
⚠ ***Risk of injury! Damage to the unit!***

Do not change the engine settings which were preset at the factory.

Symbols on the unit

Safety instructions and warning instructions, illustrated with symbols or pictograms, can be found on the engine. The symbols have the following meanings:

Caution! Warning – danger source.


Read operating instructions before starting the unit!

Warning – hot surface!

Warning – toxic vapours!

Do not use the unit in the rain!

Petrol is flammable!

Use unleaded fuel!

Always ensure that these symbols on the unit are legible.

About the engine

These operating instructions describe different models.
The graphical representations may differ in detail from the unit which you purchased.
Compare Fig. 1 with your unit and make sure you know where the different controls and regulators are located.

Fig. 1

1 Fuel cap
2 Starter handle
3 Oil filler cap/dip stick
4 Engine cover
5 Exhaust
6 a) Spark plug
b) Spark plug terminal
7 Primer (depending on model)
8 Air filter
9 On/Off switch (depending on model)
10 Choke lever (depending on model)
11 Fuel tap (depending on model)

Operating instructions

Checks to be carried out before operating the unit

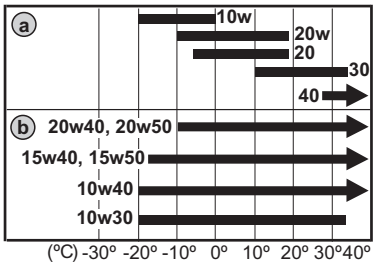
Recommended oil grades

⚠ ***Caution!***

The unit is supplied without fuel and oil in the engine. If the engine is operated without adequate oil, the engine may be seriously damaged. This damage is excluded from the warranty.

■ Before starting the engine, fill with oil. Do not pour in too much oil. The oil tank has a capacity of approx. 0.6 litres.

Use only 4-stroke oil of classification SF/SG/SH/SJ or higher.
Select the viscosity of the oil from the following table depending on the outside temperature:



a) Single viscosity
b) Multiple viscosity

SAE30 for Type A and SAE 10W-30 for Type B are recommended for general use within the normal temperature range.

If oil with an individual viscosity is used, a viscosity should be selected from the table for the average tempe-rature in the application area.

⚠ ***Caution!***
If an inferior oil or an oil for 2-stroke engines is used, the service life of the engine may be damaged.

Checking the oil level

⚠ ***Caution!***
When checking the oil, ensure that the unit is on a level surface and that the engine is switched off.

Fig. 2

- Unscrew the oil filler cap (1) and wipe the dip stick.
- Insert the dip stick into the filler neck.
  Screw in one quarter turn.
- Unscrew dipstick.
- Pull out the dipstick and check the oil level.
  If the level is too low, slowly pour in a little oil up to the upper “max” mark on the dip stick.
- Before starting the engine, firmly screw in the dip stick.

⚠ ***Caution!***
Do not pour in too much oil.
Too much oil may result in engine damage, smoke generation, starting problems, sooted spark plug or oiled-up air filter.

Recommended fuels

⚠ ***Danger!***
- *Under certain conditions petrol is extremely flammable and explosive.*
- *Refuel only in well ventilated surroundings and with the engine switched off. Do not smoke near the fuel tank or in the fuel storage location and extinguish all ignition sources.*
- *Do not overfill the petrol tank (there must be no fuel in the filler neck). After refuelling, ensure that the fuel cap is closed and secured.*
- *When refuelling, do not spill any fuel. Spilled fuel or petrol vapours may ignite. If fuel was spilled, ensure that the area is dried before restarting the engine.*
- *Avoid repeated or prolonged skin contact and inhalation of the vapours.*

⚠ ***Risk of engine damage!***
- *Do not mix fuel and oil.*
- *Use clean, fresh and unleaded fuel only.*
- *Use fuel with an octane number of 87 or higher only.*
- *Do not use fuel of specification E 85/E15!*
- *Store fuel in quantities which can be used with in 30 days.*
- *Ensure that no dirt, dust or water gets into the tank.*

Checking the petrol level

⚠ ***Caution!***
Before refuelling, leave the engine to cool down for at least two minutes.
- Before removing the fuel cap and refuelling, clean the area around the filler neck.
- Fill the tank until approx. 2 cm below the rim of the filler neck to allow the fuel to expand.

Starting the engine

⚠ ***Danger!***
Keep hands and feet away from moving parts. Do not use any pressurised starting aids.
The vapours are flammable.

⚠ ***Danger!***
Follow all operating instructions in the operating manual for the unit on which this engine is mounted.

ⓘ **Note:**
Some models have
- no choke and no primer:
  The engine is automatically set to the particular starting process.
- no throttle:
  The speed is automatically set.
  The engine always runs at optimum speed.

Fig. 3

Preparing to start the engine

If the engine is cold:

- Set throttle (1; if fitted) to position |↘|.

or

- Actuate the choke, i.e. pull out the choke lever (10, Fig. 1; if fitted).

or

- Press the primer (7, Fig. 1; if fitted):
  - at temperatures above 10 °C: Press 1–3x
  - at temperatures below 10 °C: Press 3–5x

ⓘ **Note:**
- When pressing the primer, cover the vent hole on the primer button with your finger.
- If the engine does not start, actuate the primer again.

If the engine is warm:

- Set throttle (1; if fitted) to MAX/🐇.

ⓘ **Important**
Even if the engine is warm, it may be necessary
- to actuate the choke (if fitted)

or
- to actuate the primer (if fitted) 1x.

Starting with the hand starter

- Open fuel tap (11, Fig. 1; if fitted).
- Set On/Off switch on the engine (9, Fig. 1; if available) to position “On/I”.
- Stand behind the unit, depress the safety lever (2; if fitted) and hold down against the handle.
- Pull gently on the starter handle (3) until it begins to resist. Then pull quickly and forcefully to overcome the compression and prevent a backlash. If required, repeat.

⚠ ***Caution!***
Do not let the starter handle spring back against the engine. Slowly guide it back to prevent damaging the starter.

Starting with the electric starter (depending on model)

- Disconnect charger from power supply and unit.
- Open fuel tap (11, Fig. 1; if fitted).
- Set On/Off switch on the engine (9, Fig. 1; if available) to position “On/I”.
- Stand behind the unit, depress the safety lever (2; if fitted) and hold down against the handle.
- Turn the key on the steering handle (4) to the right and hold until the engine starts.
  - Start attempt maximum 5 seconds.
  - Wait 20 seconds before trying again.

When the engine has started

- Set throttle (if fitted) to the required position:
  = fast engine speed
  = slow engine speed
- Press in choke lever (10, Fig. 1; if fitted) as soon as the engine has warmed up.

Stopping the engine

Fig. 3

- Release the safety lever (if fitted).

or

- Set the throttle (if fitted) to STOP/ STOP .

or

- Set On/Off switch on the engine (9, Fig. 1; if available) to position “Off/0”.
- Close fuel tap (11, Fig. 1; if fitted).

Important

If you switch off or leave the unit, remove ignition key (if fitted).

Maintenance

Danger!

Before carrying out any work, e.g. maintenance and cleaning work, leave the engine to cool down.
To prevent the engine from starting unintentionally, always remove the spark plug terminal.

Caution!

- *The engine has been set optimally by the manufacturer with respect to power and consumption. Any change to these settings may be made by the manufacturer or authorised technicians only.*
- *If the engine has to be tilted for transportation of the unit, for inspection or removal of grass, ensure that the spark plug is face up to prevent fuel and oil from damaging the engine.*
- *Spare parts must comply with the requirements specified by the manufacturer.*
- *Therefore, use only original spare parts or those spare parts authorised by the manufacturer. Repairs may be carried out by a specialist company only.*

To maintain a constantly high power, it is essential to inspect and re-adjust the engine on a regular basis. Regular maintenance ensures a long service life.

The required maintenance intervals and the type of maintenance work to be carried out are indicated in the following table. The intervals according to operating hours or other times/dates should be observed according to which occurs first. If the engine is operated under difficult conditions, more frequent maintenance is required.

At the end of the season have the unit inspected and serviced by a specialist company.

Maintenance schedule

Maintenance work	After the first 5 operating hours	Before each use or every 5 hours	Once a season or every 25 hours	Once a season or every 50 hours	Once a season or every 100 hours
Clean engine cover		●			
Check engine oil		●			
Change engine oil	●		●[1)]	●	
Check air filter		●			
Service air filter					●[2)]
Check spark plugs			●		
Service spark plugs					●
Change fuel filter					●
Clean/change activated-carbon filter					●[2)]
Clean exhaust area		●			

1) If a heavy load or at high ambient temperatures.

2) If operating the unit in a dusty environment, clean more frequently.

Checking the oil

- Before starting the engine, always check the oil level.
- Ensure that the correct oil level is always maintained.
  See “Checking the oil level”.

Changing the oil

⚠ ***Danger!***

Waste engine oil may cause skin cancer if it comes into contact with the skin frequently and for a prolonged period. Even though this is unlikely, provided waste oil is not handled daily, it is advisable to wash hands as soon as possible with soap and water after working with waste oil.

⚠ ***Caution!***

Drain the oil while the engine is still warm but no longer hot (the oil drains quickly and completely).

Fig. 4

- Remove the oil filler cap (1).
- Drain the oil into a suitable container by:
  – Open the oil drain plug (2) or (3) – depending on model
  or
  – tilting the unit on its side (air filter side face up).

⚠ ***Danger!***

Before tilting the unit to drain the oil, run the engine until the petrol tank is empty.

- Screw in the oil drain plug (if removed) and tighten.
- Fill the oil tank with the recommended oil and check the oil level.
- Re-attach the oil filler cap.

ⓘ **Important**

Dispose of waste oil according to the currently valid regulations for the protection of the environment. It is recommended to take the waste oil in a leakproof container to a waste oil collection centre. Do not dispose of with residual waste or pour onto the ground and leave to seep away.

Servicing the air filter

A dirty air filter restricts the air flow to the carburettor. To prevent the carburettor from malfunctioning, the air filter should be cleaned/replaced regularly. In an extremely dusty environment more frequent maintenance may be required.

A paper filter cannot be cleaned and must be changed according to the maintenance interval.

⚠ ***Danger!***

Never clean the air filter with petrol or solvents with a low flash point. There is a risk of fire or explosion.

⚠ ***Caution!***

Never run the engine without an air filter. Otherwise the engine may be damaged or subject to increased wear.

Fig. 5

Type A:

- Turn air filter cover (1) anti-clockwise (to the left) and pull out backwards.
- Remove paper filter element (3).
- Clean air filter cover (1) and mounting flange (4).
- Fit new paper filter element in the air filter cover.
- Press retaining plates (2) of the air filter cover into the retaining slots (5) of the mounting flange and turn all the way clockwise (to the right).
- Ensure that the air filter cover is positioned correctly!

Type B:

- Press on the retaining plates (2) of the air filter cover (1) and remove cover.
- Remove paper filter element (3).
- Gently tap the paper element several times on a hard surface to remove dirt or blow out dirt with compressed air from inside through the filter. Never attempt to brush out dirt; the dirt would only be rubbed permanently into the fibres. Replace the paper element if it is excessively dirty.
- Re-insert paper filter element.
- Attach cover:
  – Press lower retaining plates of the air filter cover into the lower retaining slots of the air filter housing (4).
  – Press air filter cover upwards until the upper retaining plates (2) engage in the upper retaining slots (5).
- Ensure that the air filter cover is positioned correctly!

Servicing the spark plug

⚠ ***Danger!***

Leave the engine too cool down.
Conduct an ignition test on a spark plug which has been removed.
Do not start the engine without installed spark plug.

To ensure that the engine runs correctly, the gap between the electrodes on the spark plug must be set correctly and free of contaminants.

Fig. 6

- Remove the spark plug terminal (1) and unscrew the spark plug (2) with a spark-plug wrench.
- Visually check the spark plug. Replace the spark plug if it is clearly worn or the insulator is damaged.
- Clean the spark plug with a wire brush if it is to be used again.
- Measure the gap between the electrodes with a feeler gauge. If required, re-adjust the gap by slightly bending the side electrode. The gap between the electrodes should be 0.70–0.80 mm (Fig. 7).
- Check that the sealing ring on the spark plug is in good condition, then screw in the spark plug by hand to prevent damage to the thread.
- When the spark plug is hand-tight, tighten with the spark-plug wrench.

⚠ ***Caution!***

Do not tighten the spark plug too tightly. Observe the following values for tightening the spark plug with a spark-plug wrench:

– *new spark plug maximum $^1/_2$ revolution*
– *used spark plug maximum $^1/_8$ – $^1/_4$ revolution.*

An incorrectly tightened spark plug may become very hot and damage the engine.

Maintenance of the activated-carbon filter/fuel filter

This maintenance work may only be performed by a service centre according to maintenance schedule.

Cleaning the engine

If the engine has already been running, leave it to cool down for at least one hour before cleaning. Regularly remove accumulated grass and dirt from the engine. Clean the finger guard and the area around the exhaust. Use a brush or compressed air.

⚠ ***Caution!***

Do not clean the engine by spraying it with water, as the fuel may be contaminated. Water from a garden hose or high-pressure cleaner may also penetrate the air filter or the exhaust opening and damage the engine.

⚠ ***Danger!***

Dirt which has accumulated around the exhaust may catch fire. Check and clean the area before using the unit.

Storage

ⓘ **Note:**

If storage is for longer than 30 days, a stabiliser can be added to the fuel. Contact your dealer or the customer service centre.

Engines which are stored for longer than 30 days should have an empty fuel tank in order to prevent the formation of residue in the fuel system, especially on important parts of the carburettor.

- Leave the engine running until the tank runs out of fuel and the engine stops.
- Change the oil. See “Changing the oil”.
- Remove the spark plug and pour approx. 15 ml of engine oil into the cylinder. Re-install the spark plug and slowly pull the starter cable to distribute the oil.
- Remove grass and dirt from around the engine, from under the engine cover and from around the exhaust.
- Touch up areas of flaking paint and apply a thin film of oil to other areas which could rust.
- Store in a clean, dry and well ventilated area away from units which operate with a flame or a warning lamp, e.g. heating equipment, boilers or tumble-dryers. Areas should also be avoided in which a spark-generating electric motor is situated or in which electric tools are used.
- If possible, storage areas with a high air humidity should not be selected either, as this promotes the formation of rust and corrosion.
- Store the unit on a flat surface. If the unit is on an incline, fuel or oil may run out.

Procedure following prolonged storage

- Check the engine as described in the section “Checking the engine before start-up”.
- If the fuel was drained prior to storage of the unit, fill up the tank with fresh petrol. If a petrol can is used for refuelling, ensure that it contains fresh petrol.
- If the cylinder was oiled during storage, the engine generates a little smoke when it is started. This is normal.

Warranty

The warranty regulations issued by our company or the importer are valid in all countries. We shall repair any faults on your unit free of charge in accordance with the warranty, provided the fault was due to defective materials or manufacturing. If claiming under the warranty, please contact your seller or your nearest branch.

Troubleshooting

Fault	Possible cause	Remedial action
Engine does not start.	Safety lever not actuated.	Actuate safety lever (if fitted).
	No fuel in the tank.	Fill tank with clean, fresh and lead-free fuel.
	Stale fuel.	Drain stale fuel into a suitable container outdoors. Fill tank with clean, fresh and lead-free fuel.
	Engine in a cold state, choke/primer (if fitted) not actuated.	Actuate choke/primer.
	Throttle not set to “START” or maximum speed.	Set throttle to “START” – maximum speed.
	Spark plug terminal not connected.	Connect spark plug terminal to the spark plug.
	Spark plug dirty or defective.	Clean spark plug. Re-adjust gap between electrodes or change spark plug.
	Blocked petrol line.	Clean petrol line *).
Engine runs irregularly (splutters).	Choke (if fitted) actuated.	Put back choke lever.
	Spark plug terminal connected loosely.	Firmly connect spark plug terminal.
	Stale fuel. Water or dirt in fuel system.	Drain stale fuel into a suitable container outdoors. Fill tank with clean, fresh and lead-free fuel.
	Air filter dirty.	Clean air filter.
	Spark plug scorched, defective or gap between electrodes too wide.	Re-adjust gap between electrodes or change spark plug.
Engine overheats.	Inadequate engine oil.	Fill crank case with appropriate amount of oil.
	Air flow restricted.	Remove grass clippings and dirt from the area around the cooling fins on the engine and from the blower housing.
Engine cuts out at high speed.	Gap between electrodes too narrow.	Remove spark plug and re-adjust gap between electrodes.

*) This work may be carried out by a specialist company only

Important

If repairs exceed the work mentioned above, please contact your local dealer with customer service facilities.